IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of:	§	
Paul Nicholls	§	Group Art Unit: 2855
	§	
Serial No.: 10/530,502	§	
	§	Examiner: Verbitsky, Gail Kaplan
Filed: August 21, 2006	§	
	§	
For: A Vessel Having Temperature Monitoring Apparatus	§	Atty Docket: 101.0057
	§	
	§	

Assistant Commissioner
for Patents
Washington, D.C. 20231

Assistant Commissioner:

APPEAL BRIEF PURSUANT TO 37 C.F.R. §§ 41.31 AND 41.37

This Appeal Brief is being filed in furtherance to the Notice of Appeal filed on January 12, 2011.

1. **REAL PARTY IN INTEREST**

The real party in interest is Schlumberger Technology Corporation, the Assignee of the above-referenced application by virtue of the Assignment recorded at reel 017838, frame 0567.

2. **RELATED APPEALS AND INTERFERENCES**

Previously, a Notice of Appeal was filed in the present case (via Certificate of Mailing on October 8, 2009) and an Appeal Brief was filed in support of the October 8, 2009 Notice of Appeal (via Certificate of Mailing on December 1, 2009). In light of the arguments in the Appeal Brief, the Examiner attempted to reopen prosecution of the present application with the Office Action mailed March 18, 2010. In response, another Notice of Appeal was filed on June 15, 2010 and an Appeal Brief was filed in support of the June 15, 2010 Notice of Appeal on August 7, 2010. Subsequently, the Examiner again attempted to reopen prosecution of the

present application with the Office Action mailed October 27, 2010. Because the rejections were again believed to be unsupported by the cited art, Appellant filed a third Notice of Appeal on January 12, 2011. Appellant is unaware of any other appeals or interferences related to this Appeal. The undersigned is Appellant's legal representative in this Appeal. Schlumberger Technology Corporation, the Assignee of the above-referenced application as evidenced by the documents listed above, will be directly affected by the Board's decision in the pending appeal.

3. STATUS OF CLAIMS

Claims 1-7, 9-16, 18, 20-31 were finally rejected by the Examiner as of the final Office Action dated July 7, 2009. (Claims 1-7, 9-16, 18 and 20-31 were again rejected in the March 18, 2010 Office Action mailed after the December 1, 2009 Appeal Brief. Similarly, claims 1-7, 9-16, 18 and 20-31 were subsequently rejected in the October 27, 2010 Office Action mailed after the August 7, 2010 Appeal Brief.) Claims 8, 17, 19 were canceled without prejudice prior to the final Office Action dated July 7, 2009. The rejection of claims 1-7, 9-16, 18, 20-31 is appealed.

4. STATUS OF AMENDMENTS

The most recent amendment was in a Reply and Amendment, filed under certificate of mailing on April 8, 2009, in which claim 1 was amended. However, no amendments have been filed after the final Office Action dated July 7, 2009.

5. SUMMARY OF THE CLAIMED SUBJECT MATTER

a.) Independent Claim 1

Independent claim 1 is directed to a vessel (2) which comprises a body (4), a conduit (6), and a distributed temperature system (12). The conduit (6) is disposed near the body (4), and the distributed temperature system (12) comprises an optical fiber (14) positioned in the conduit (6) to monitor temperature in the body (4). *(See, for example, page 4, line 14-24).* The vessel (2) also comprises a control unit (50). *(See, for example, page 8, lines 2-4).* Additionally, vessel (2) comprises a tray (22), an outlet weir (24), and a downcomer (26) positioned within the body (4). The conduit (6) and optical fiber (14) extend such that they provide a temperature profile of

temperatures in at least a portion of the body (4) containing the tray (22), outlet weir (24), and downcomer (26). *(See, for example, page 5, lines 4-17 and page 6, lines 11-17).* A process is performed within the vessel (2) and the control unit (50) automatically controls parameters in the body (4) depending on the temperature profile to ensure that the process is within an acceptable range. *(See, for example, page 8, lines 2-24).*

b.) Independent Claim 18

Independent claim 18 is directed to a method for monitoring a vessel (2). The method comprises disposing a conduit (6) near a body (4) of the vessel (2) and monitoring temperature in the body (4) by use of a distributed temperature system (12) which includes an optical fiber (14) located within the conduit (6). *(See, for example, page 4, line 14-24).* The method further comprises extending the conduit (6) and the optical fiber (14) so they provide a temperature profile of temperatures in at least a portion of the body (4). *(See, for example, page 5, lines for-13).* The method further comprises automatically controlling parameters in the body (4) according to the temperature profile obtained by the distributed temperature system (12). *(See, for example, page 8, lines 2-24).*

6. **GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

a.) Whether claims 1-7 and 9-16 are unpatentable under 35 U.S.C. § 103(a) as obvious based on the Argarwal reference, US Patent No.: 4,440,509, in view of the Hartog et al. reference, US Patent No.: 5,821,861, in view of the DeBruin reference, US Patent Application Publication No.: 2008/0312406, in view of the Chuang et al. reference, US Patent No.: 7,211,702, in view of the Gamson reference, US Patent No.: 3,440,865.

b.) Whether claims 18 and 20-31 are unpatentable under 35 U.S.C. § 103(a) as obvious based on the Argarwal reference, US Patent No.: 4,440,509, in view of the Hartog et al.

reference, US Patent No.: 5,821,861, in view of the Guang reference (the Examiner appears to have meant the Chuang et al. reference, US Patent No.: 7,211,702), in view of the Gamson reference, US Patent No.: 3,440,865.

7. **ARGUMENT**

a.) Rejection of claims 1-7 and 9-16 as unpatentable under 35 U.S.C. § 103(a) as obvious based on the Argarwal reference, US Patent No.: 4,440,509, in view of the Hartog et al. reference, US Patent No.: 5,821,861, in view of the DeBruin reference, US Patent Application Publication No.: 2008/0312406, in view of the Chuang et al. reference, US Patent No.: 7,211,702, in view of the Gamson reference, US Patent No.: 3,440,865.

- Claims 1-7 and 9-16

Claims 1-7 and 9-16 were improperly rejected as obvious over the Argarwal reference in view of the Hartog et al reference, in view of the DeBruin reference, in view of the Chuang et al. reference, in view of the Gamson reference. No prima facie case of obviousness has been established, and the rejection should be withdrawn.

Appellant notes the Examiner's rejection relies on selection of elements from five different and unrelated references. As discussed below, this combination of references fails to disclose or suggest elements of the subject claims (as demonstrated in the two previously filed Appeal Briefs in which similar combinations of references were attempted). However, even if all of the elements of the subject claims could be found in these five different references, the combination of references is based on guidance from the roadmap provided by the present application. Such hindsight analysis, guided by the present application, is impermissible and fails to establish the requisite prima facie case of obviousness. Furthermore, the cited references specifically teach against such combination as also discussed below.

In the October 27, 2010 Office Action, the Argarwal reference is characterized as disclosing a reaction vessel and that the "temperature profile of the body/vessel is measured by a

plurality of temperature sensors located on the outside surface of the vessel having a body (skin/wall) in order to produce a final control signal for the vessel". However, a further statement is made that the Argarwal reference fails to teach that the "temperature profile could be measured by optical fiber" and also fails to teach "a control unit that automatically controls parameters in the body depending on the temperature profile to ensure the process is within an acceptable range" (See page 3, second and third paragraphs). The four other cited references are relied on to provide missing elements. However, these multiple references fail to disclose or suggest all other elements of the pending claims, and thus fail to establish a prima facie case of obviousness as discussed in greater detail below.

The Argarwal reference describes a technique and arrangement of temperature sensors in an isothermal chemical reactor 50. The isothermal chemical reactor 50 has a longitudinal temperature profile and a radial temperature profile, and the Argarwal technique and arrangement enables a reduction in the number of temperature sensors required for accurate temperature detection. (See column 4, lines 15-55). The Argarwal technique avoids the need for substantial processing power that would be required by temperature sensing at a large number of locations such as the temperature sensing inherent in a distributed temperature system.

In the October 27, 2010 Office Action, the Debruin reference is relied on as supplying some of the elements missing from the Argarwal reference. For example, a statement is made on page 3 of the October 27, 2010 Office that the Debruin reference "states that some reactors, especially catalyst or ester exchange reactors, distillation columns (separates liquid for subsequent processing) have such internals as weirs, trays, downcomers, and also need temperature control, and thus knowledge of temperature inside reactor." However, no specific reference citations were provided and Appellant was unable to find these teachings in the Debruin reference.

The Debruin reference teaches employment of at least one weir along the interior surface of an esterification pipe reactor. (See page 26, paragraph 0374, and Figure 4). Additionally, the Debruin reference describes the use of a weir or weirs to control liquid levels in each pipe level

of a reactor. (See page 28, paragraphs 0402-0406, and Figure 9). However, Appellant respectfully submits the reference does not disclose the other elements for which it is relied on to support the present rejection under 35 USC 103(a). Accordingly, no prima facie case of obviousness can be established and the rejection of claims 1-7 and 9-16 should be withdrawn.

In the October 27, 2010 Office Action, the Hartog et al. reference also is relied on as supplying other claim elements missing from the four additional references cited. This reference discloses a system for monitoring shell temperatures in a reactor. The system comprises a bundle of optical fibers 20 that are located in a tubular metal sheath 24 positioned on the outside of a shell 16. The optical fibers 20 are connected to processing equipment 28 by a fiber optic field junction box 22. (See column 2, lines and 46-52). The processing equipment 28 is described as a control system for the optical fibers. For example, the processing means 28 comprises a laser source which launches pulses of light (See column 3, lines 1-3) used in providing the spatial resolution of the system, and the processing means 28 is described as a "reflectometry processing means 28" (See column 5, lines 23-25). Accordingly, the Hartog et al. reference, like the other cited references, fails to disclose, teach or suggest automatic control of parameters *in* a body to ensure that a process occurring *within* is in an acceptable range based on output from a distributed temperature system. None of the references discloses these elements of independent claim 1.

A further statement is made in the October 27, 2010 Office Action that it would have been obvious to one of ordinary skill in the art at the time the present invention was made "to modify the device disclosed by Argrawal, so as to replace the temperature sensors measuring the temperature profile" with the "optical fiber positioned in a metal conduit, as taught by Hartog". As discussed in greater detail below, however, this assertion is directly contrary to the specific teachings of the Agarwal reference which discloses and teaches a technique and arrangement designed to employ a "reduced" number of temperature sensors. (See column 4, lines 37-39). In fact, the Agarwal specifically states that "an object of the present invention is to provide an arrangement and method for establishing longitudinal and radial temperature profiles in a reactor for containing a thermic reaction which utilizes a minimum of temperature sensors". (See

column 2, lines 24-68). Accordingly, the Agarwal reference specifically teaches against the large number, e.g. infinite number, of sensors utilized in a fiber optic or distributed temperature sensor system (see Hartog et al.). This "teaching away" renders improper the combination of references relied on by the Examiner and no prima facie case of obviousness can be established.

In formulating the rejection under 35 USC 103(a) discussed above, the Examiner cites the Chuang et al. reference as teaching claim elements missing from the other cited references. For example, a statement is made that the Chuang et al. reference describes a reactor vessel as part of a distillation column/system in which "the temperature and pressure vessel is controlled by valves and automatic controllers in order to control the process parameters and to keep them within acceptable range". (See October 27, 2010 Office Action, page 4, paragraph 4). The Chuang et al. reference, however, describes a catalytic distillation column 12 having a body 22 and an interior cavity 30. (See column 7, lines 38-40). The Chuang et al. invention is designed to provide a process by which, in part, an olefin is hydrated to produce a corresponding alcohol under mild conditions. In another aspect of the invention, a process is provided to remove water from an azeotropic mixture of an alcohol and water to allow recovery of the corresponding substantially anhydrous alcohol under mild conditions. (See column 3, lines 41-59). However, the Chuang et al. reference does not appear to describe control over temperature and pressure of a vessel by valves and automatic controllers to keep process parameters within an acceptable range in a manner as recited in the subject claims - contrary to the assertions made in the Office Action. (See October 27, 2010 Office Action, page 4). Accordingly, the disclosure of the cited references is not sufficient to support a prima facie case of obviousness under 35 USC 103(a), and the rejection should be removed.

In formulating the rejection under 35 USC 103(a) discussed above, the Examiner relies on the Gamson reference as teaching other claim elements missing from the four additional references cited. However, the Gamson references provide no disclosure or teaching that would obviate the deficiencies of disclosure in the four other cited references, as discussed above. Accordingly, the Gamson reference does not establish a prima facie case of obviousness, and the rejection of claims 1-7 and 9-16 under 35 USC 103(a) should be withdrawn.

Accordingly, even if the cited references could be combined, the combination fails to disclose, teach or suggest elements of independent claim 1. By way of specific examples, the combination of references fails to disclose, teach or suggest a distributed temperature system "comprising an optical fiber positioned in the conduit" combined with a control unit that "automatically controls parameters in the body depending on the temperature profile to ensure that the process is within an acceptable range" as recited in independent claim 1. The references further fail to disclose, teach or suggest "a tray, an outlet weir, and a downcomer positioned within the body" combined with the conduit and the optical fiber providing a temperature profile of temperatures in at least a portion of the body "containing the tray, the outlet weir and the downcomer" as also recited in independent claim 1. Accordingly, no prima facie case of obviousness has been established and the rejection under 35 USC 103(a) should be withdrawn with respect to independent claim 1 and its dependent claims 2-7 and 9-16.

As discussed briefly above, even if the five cited references do disclose the elements of the subject claims, the combination is improper. Without the roadmap provided by the present application, the Examiner would not have been able to pick and choose individual elements from five different and unrelated references in an attempt to establish a prima facie case of obviousness. In fact, the cited references contain specific teachings against such combination. The Agarwal reference specifically discloses and teaches a technique and arrangement designed to use a "reduced" number of temperature sensors. (See column 4, lines 37-39). As set forth previously, the Agarwal reference explicitly states that "an object of the present invention is to provide an arrangement and method for establishing longitudinal and radial temperature profiles in a reactor for containing a thermic reaction which utilizes a minimum of temperature sensors". (See column 2, lines 24-68). Accordingly, the Agarwal reference teaches directly against the large number, e.g. infinite number, of sensors utilized in an optical fiber temperature sensor system as disclosed in references, such as the Hartog et al. reference. This "teaching away" renders improper the combination of references relied on by the Examiner and no prima facie case of obviousness can be established.

No one of ordinary skill in the art would replace the technique and system for minimizing the number of sensors described in the Agarwal reference with an optical fiber sensor system, effectively having a large, e.g. infinite, number of sensors. Without the teachings of the present application, the person of ordinary skill in the art would be led away from combining the teachings of the multiple references cited in the Office Action.

As set forth in MPEP §2142, "the examiner must step backward in time and into the shoes worn by the hypothetical 'person of ordinary skill in the art' when the invention was unknown and just before it was made." The examiner must ignore the applicant's disclosure in reaching this determination to avoid impermissible hindsight and to enable determination as to whether the claimed invention "as a whole" would have been obvious to the person of ordinary skill in the art at that time. *Id.* Accordingly, the teachings of the present application cannot be used in hindsight to re-create the teachings of the cited references in a manner contrary to what they would have taught one of ordinary skill in the art when the present invention was unknown and just before it was made. Therefore, no prima facie case of obviousness can be established, and the rejection of independent claim 1 under 35 USC 103 should be withdrawn.

Claims 2-7 and 9-16 ultimately depend from independent claim 1 and recite additional elements. Therefore, no prima facie case of obviousness can be established with respect to these dependent claims, and the rejection under 35 USC 103 also should be withdrawn with respect to these dependent claims.

b.) Rejection of claims 18 and 20-31 as unpatentable under 35 U.S.C. § 103(a) as obvious based on the Argarwal reference, US Patent No.: 4,440,509, in view of the Hartog et al. reference, US Patent No.: 5,821,861, in view of the Guang reference (the Examiner appears to have meant the Chuang et al. reference, US Patent No.: 7,211,702), in view of the Gamson reference, US Patent No.: 3,440,865.

- <u>Claims 18, 20, 22, 23, 25, 26, 30 and 31</u>

Claims 18, 20, 22, 23, 25, 26, 30 and 31 were improperly rejected as obvious over the Argarwal reference in view of the Hartog et al. reference, in view of the Guang (Chuang et al.) reference in view of the Gamson reference. No prima facie case of obviousness has been established, and the rejection should be withdrawn.

As with the previous rejection discussed above, the Argarwal reference is characterized as disclosing a reaction vessel and that the "temperature profile is measured by a plurality of temperature sensors located on the outside surface of a vessel having a body (skin/wall) in order to produce a final control signal for the vessel". However, a further statement is made that the Argarwal reference fails to teach that the "temperature profile could be measured by an optical fiber" and also fails to teach "a control unit that automatically controls parameters in the body depending on the temperature profile to ensure that the process is within an acceptable range" (See October 27, 2010 Office Action, page 6, second and third paragraphs). The three other cited references are relied on to provide missing claim elements. However, these multiple other references also fail to disclose or suggest all elements of the pending claims, and thus fail to establish a prima facie case of obviousness.

As discussed above, the Argarwal reference describes a technique and arrangement of temperature sensors in an isothermal chemical reactor 50. The isothermal chemical reactor 50 has a longitudinal temperature profile and a radial temperature profile, and the Argarwal technique and arrangement enables a reduction in the number of temperature sensors required for accurate temperature detection. (See column 4, lines 15-55). This technique avoids the need for substantial processing power that would be required by temperature sensing at a large number of locations such as the distributed temperature sensing inherent in a distributed temperature system.

In the October 27, 2010 Office Action, page 6, the Hartog et al. reference is relied on as supplying other elements missing from the subject claims. As described above, the Hartog et al. reference discloses a system for monitoring shell temperatures in a reactor. The system comprises a bundle of optical fibers 20 that are located in a tubular metal sheath 24 positioned on

the outside of a shell 16. The optical fibers 20 are connected to processing equipment 28 by a fiber optic field junction box 22. (See column 2, lines and 46-52). The processing equipment 28 is described as a control system for the optical fibers. For example, the processing means 28 comprises a laser source which launches pulses of light (See column 3, lines 1-3) used in providing the spatial resolution of the system, and the processing means 28 is described as a "reflectometry processing means 28" (See column 5, lines 23-25). Accordingly, the Hartog et al. reference, like the other cited references, fails to disclose, teach or suggest *automatically controlling parameters in* the body depending on the temperature profile obtained by a distributed temperature system. None of the references discloses these and other elements of independent claim 18.

Additionally, a further statement is made in the October 27, 2010 Office Action, page 7, first full paragraph, that it would have been obvious to one of ordinary skill in the art at the time the present invention was made "to modify the device, so as to embed the conduit with the fiberoptic within the wall, as taught by Hartog". As discussed above with regard to a similar assertion in the previous rejection, this assertion is directly contrary to the specific teachings of the Agarwal reference which discloses and teaches a technique and arrangement designed to employ a "reduced" number of temperature sensors. (See column 4, lines 37-39). The Agarwal reference specifically states that "an object of the present invention is to provide an arrangement and method for establishing longitudinal and radial temperature profiles in a reactor for containing a thermic reaction which utilizes a minimum of temperature sensors". (See column 2, lines 24-68). Accordingly, the Agarwal reference specifically teaches against the large number, e.g. infinite number, of sensors utilized in a distributed temperature sensor system. This "teaching away" renders improper the combination of references relied on by the Examiner and no prima facie case of obviousness can be established.

In formulating the latter rejection under 35 USC 103(a), the Examiner cites the Chuang et al. reference as teaching claim elements missing from the other cited references. For example, a statement is made that the Chuang et al. reference describes a reactor vessel as part of a distillation column/system in which "the temperature and pressure of the vessel is controlled by

valves and automatic controllers in order to control the process parameters and to keep them within acceptable range". (See October 27, 2010 Office Action, page 7, second full paragraph). As discussed above, the Chuang et al. reference describes a catalytic distillation column 12 having a body 22 and an interior cavity 30. (See column 7, lines 38-40). The Chuang et al. invention is designed to provide a process by which, in part, an olefin is hydrated to produce a corresponding alcohol under mild conditions. In another aspect of the invention, a process is provided to remove water from an azeotropic mixture of an alcohol and water to allow recovery of the corresponding substantially anhydrous alcohol under mild conditions. (See column 3, lines 41-59). However, the Chuang et al. reference does not appear to describe control over temperature and pressure of a vessel by valves and automatic controllers to keep process parameters within an acceptable range in a manner as recited in the subject claims - contrary to the assertions made in the Office Action. (See October 27, 2010 Office Action, page 7). Accordingly, the disclosure of the cited references is not sufficient to support a prima facie case of obviousness under 35 USC 103(a), and the rejection should be removed.

In formulating the rejection under 35 USC 103(a) discussed above, the Examiner further cites the Gamson reference as teaching claim elements missing from the other cited references. However, the Gamson references provide no additional disclosure that would obviate the deficiencies of disclosure in the three other cited references, as discussed above. Accordingly, the Gamson reference does not establish a prima facie case of obviousness, and the rejection of claims 18 and 20-31 under 35 USC 103(a) should be withdrawn.

Even if the cited references could be combined, the combination fails to disclose, teach or suggest elements of independent claim 18. By way of specific examples, the combination of references fails to disclose, teach or suggest a method for monitoring a vessel comprising monitoring temperature in a body "by use of a distributed temperature system including an optical fiber that is located within the conduit" combined with "automatically controlling parameters in the body depending on the temperature profile obtained by the distributed temperature system" as recited in independent claim 18. Accordingly, no prima facie case of

obviousness has been established, and the rejection under 35 USC 103(a) should be withdrawn with respect to independent claim 18 and its dependent claims 20, 22, 23, 25, 26, 30 and 31.

As discussed above, even if the four cited references could be construed as disclosing the elements of the subject claims, the combination is improper. Without the roadmap provided by the present application, the Examiner would not have been able to pick and choose individual elements from four different and unrelated references in an attempt to establish a prima facie case of obviousness. In fact, the cited references contain specific teachings against such combination. The Agarwal reference specifically discloses and teaches a technique and arrangement which utilizes a "reduced" number of temperature sensors. (See column 4, lines 37-39). Furthermore, the Agarwal reference explicitly states that "an object of the present invention is to provide an arrangement and method for establishing longitudinal and radial temperature profiles in a reactor for containing a thermic reaction which utilizes a minimum of temperature sensors". (See column 2, lines 24-68). Accordingly, the Agarwal reference teaches directly against the large number, e.g. infinite number, of sensors utilized in an optical fiber temperature sensor system as disclosed in references, such as the Hartog et al. reference. This "teaching away" renders improper the combination of references relied on by the Examiner and no prima facie case of obviousness can be established.

No one of ordinary skill in the art would replace the technique and system for minimizing the number of sensors described in the Agarwal reference with an optical fiber sensor system, effectively having a large, e.g. infinite, number of sensors. Without the teachings of the present application, the person of ordinary skill in the art would be led away from combining the teachings of the multiple references cited in the October 27, 2010 Office Action.

Again, as set forth in MPEP §2142, "the examiner must step backward in time and into the shoes worn by the hypothetical 'person of ordinary skill in the art' when the invention was unknown and just before it was made." The examiner must ignore the applicant's disclosure in reaching this determination to avoid impermissible hindsight and to enable determination as to whether the claimed invention "as a whole" would have been obvious to the person of ordinary

skill in the art at that time. *Id.* Accordingly, the teachings of the present application cannot be used in hindsight to re-create the teachings of the cited references in a manner contrary to what they would have taught one of ordinary skill in the art when the present invention was unknown and just before it was made. Therefore, no prima facie case of obviousness can be established, and the rejection of independent claim 1 under 35 USC 103 should be withdrawn.

Claims 20-31 ultimately depend from independent claim 18 and recite additional elements. Therefore, no prima facie case of obviousness can be established with respect to these dependent claims, and the rejection under 35 USC 103 also should be withdrawn with respect to these dependent claims.

- Claims 21, 24, 27, 28 and 29

Claims 21, 24, 27, 28 and 29 ultimately depend from independent claim 18 and recite additional elements. As a result, no prima facie case of obviousness can be established with respect to these dependent claims for the reasons discussed above with respect to independent claim 18. Therefore, the rejection of these dependent claims under 35 USC 103 should be withdrawn.

However, these dependent claims provide additional examples of a variety of elements which are not disclosed, taught or suggested by the cited references - even if those references could be properly combined. As discussed in detail above, the combination of references is improper, however Appellant wishes to briefly discuss the unique language of these dependent claims.

None of the cited references, taken alone, nation, is believed to disclose or suggest the unique elements of independent claim 18 combined with "disposing the conduit inside of the body" as recited in dependent claim 21. Similarly, the cited references do not describe the elements of claim 18 with the additional element of controlling specific parameters when at least one of the parameters "is pressure" as recited in dependent claim 24. The references also fail to

disclose or suggest the unique elements of independent claim 18 combined with "separating liquid components in the vessel for subsequent processing" as recited in dependent claim 27; "feeding vapor at one end of the vessel and feeding liquid at another end of the vessel" as recited in dependent claim 28; or "feeding vapor at a top end of the vessel and feeding liquid at a bottom end of the vessel" as recited in dependent claim 29. Accordingly, the rejection of these dependent claims under 35 USC 103(a) should be withdrawn.

In view of the above remarks, Appellant respectfully submits the Examiner has provided no supportable position or evidence that any of the claims 1-7, 9-16, 18 and 20-31 is obvious under 35 U.S.C. § 103(a). Accordingly, Appellant respectfully requests that the Board find claims 1-7, 9-16, 18 and 20-31 patentable over the art of record, withdraw all outstanding rejections, and allow claims 1-7, 9-16, 18 and 20-31.

A fee in the amount of $540.00 was already paid at the time of filing the December 1, 2009 Appeal Brief. Accordingly, no additional fees should be necessary for filing the present Appeal Brief in furtherance of the Notice of Appeal filed on January 12, 2010. However, if the amount paid is insufficient, or if additional fees are necessary in conjunction with the present Appeal Brief, the Commissioner is authorized to charge Deposit Account No.: 500457.

Respectfully submitted,

/s/ /Robert A. Van Someren/

Date: March 3, 2011

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8. CLAIMS APPENDIX

1. A vessel, comprising:

a body; a conduit disposed near the body; a distributed temperature system for monitoring temperature in the body and comprising an optical fiber positioned in the conduit; a control unit; and a tray, an outlet weir, and a downcomer positioned within the body, the conduit and the optical fiber extending such that they provide a temperature profile of temperatures in at least a portion of the body containing the tray, the weir, and the downcomer, wherein a process is performed within the vessel; and the control unit automatically controls parameters in the body depending on the temperature profile to ensure that the process is within an acceptable range.

2. The vessel of claim 1, further comprising a control unit for automatically controlling parameters in the body depending on the temperature profile obtained by the distributed temperature system.

3. The vessel of claim 1, wherein the conduit is a metal conduit.

4. The vessel of claim 3, wherein the metal conduit is constructed from stainless steel.

5. The vessel of claim 1, wherein the conduit is located outside of the body.

6. The vessel of claim 1, wherein the conduit is located inside of the body.

7. The vessel of claim 1, wherein the optical fiber is pumped into the conduit by way of fluid drag.

9. The vessel of claim 1, wherein at least one of the parameters is pressure.

10. The vessel of claim 1, wherein at least one of the parameters is temperature.

11. The vessel of claim 1, wherein: the process has a plurality of stages within the vessel; and the control unit controls the parameters in the body depending on the temperature profile to ensure that each stage of the process is within an acceptable range.

12. The vessel of claim 1, wherein the vessel is part of a distillation system.

13. The vessel of claim 12, wherein the distillation system separates liquid components for subsequent processing.

14. The vessel of claim 1, wherein vapour enters the vessel at one end of the vessel and liquid enters the vessel at another end of the vessel.

15. The vessel of claim 14, wherein the vapour enters at a top end of the vessel and the liquid enters at a bottom end of the vessel.

16. The vessel of claim 1, further comprising: a plurality of valves that control parameters within the body; and the parameters are controlled depending on the temperature profile to ensure that a process taking part in the body is within an acceptable range.

18. A method for monitoring a vessel, comprising:

disposing a conduit near a body of the vessel;

monitoring temperature in the body by use of a distributed temperature system including an optical fiber that is located within the conduit;

extending the conduit and the optical fiber such that they provide a temperature profile of temperatures in at least a portion of the body; and

automatically controlling parameters in the body depending on the temperature profile obtained by the distributed temperature system.

20. The method of claim 18, wherein the disposing step comprises disposing the conduit outside of the body.

21. The method of claim 18, wherein the disposing step comprises disposing the conduit inside of the body.

22. The method of claim 18, further comprising pumping the optical fiber into the conduit by way of fluid drag.

23. The method of claim 18, further comprising: performing a process within the vessel; and automatically controlling parameters in the body depending on the temperature profile to ensure that the process is within an acceptable range.

24. The method of claim 23, wherein at least one of the parameters is pressure.

25. The method of claim 23, wherein at least one of the parameters is temperature.

26. The method of claim 23, further comprising automatically controlling the parameters depending on the temperature profile to ensure that each of a plurality of stages of the process is within an acceptable range.

27. The method of claim 18, further comprising separating liquid components in the vessel for subsequent processing.

28. The method of claim 18, further comprising feeding vapour at one end of the vessel and feeding liquid at another end of the vessel.

29. The method of claim 28, further comprising feeding vapour at a top end of the vessel and feeding liquid at a bottom end of the vessel.

30. The method of claim 18, further comprising: controlling parameters within the body by the use of a plurality of valves; and controlling the parameters depending on the temperature

profile to ensure that a process taking part in the body is within an acceptable range.

31. The method of claim 30, further comprising automatically controlling the parameters depending on the temperature profile to ensure that a process taking part in the body is within an acceptable range.

9. **EVIDENCE APPENDIX**

Not Applicable

10. **RELATED PROCEEDINGS APPENDIX**

Not Applicable